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To Karl Brooks, Rich Hood, Cecilia Tapia, David Cozad,
DeAndre Singletary, Gene Gunn, Dan Gravatt, Audrey Asher
cc Hattie Thomas, William Rice, Robertw Jackson

bcc

Subject Follow-Up Report - History & Timeline of the Shattuck Site -
R8

Karl:

As a result of the meeting we held with you on Thursday, April 21st to discuss the status of the West Lake Landfill Supplemental Feasibility Study (SFS), you asked that OPA prepare a summary report about the background on the Denver Radium Superfund Sites (OU-8 Shattuck Chemical Co.) It was noted that there may be some similarities between West Lake Landfill and Shattuck.

I am attaching the summary report you requested. A special thanks to Gene Gunn and Dan Gravatt for their input.

If you have questions, please feel free to call me. On a similar note.....Gene has actually visited the Shattuck site.

Debbie



ShattuckReportforRA.docx

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DENVER RADIUM SUPERFUND SITES – OPERABLE UNIT 8 - SHATTUCK CHEMICAL COMPANY OVERVIEW

History & Timeline

(April 2011)

1979.....Per a U.S. Bureau of Mines report, EPA was tasked to perform investigations at former radioactive ore processing facilities. The Denver Radium Sites, located throughout the Denver area were included in this investigation. The Shattuck site is one Operable Unit (OU) of the Denver Radium Sites. It is OU-8.

1982.....Denver Radium Sites were proposed to the National Priorities List.

1983.....Denver Radium Sites were placed on the National Priorities List. EPA assumed “fund lead” activities at these sites because the Colorado State Legislature failed to appropriate the State cost share (10%) for remedial planning as required by EPA statute.

1988.....EPA conducted a Remedial Investigation/Feasibility Study (RI/FS) at Shattuck.

1991.....Further study of the site was conducted and completed. Findings showed that radiological contamination was present in site soils over an area of approximately 230,000 square feet (sf) and extended from the ground surface to depths ranging to over 14.5 ft.- below ground surface (ftbgs). The estimated volume of contaminated soil at the site was 38,500 cubic yards (cy).

1992.....Record of Decision (ROD) on the Denver Radium Sites, OU-8 was signed and issued by EPA and the Colorado Department of Health. The remedy consisted of: all buildings and facilities to be demolished and disposed of offsite; contaminated soil to be stabilized and solidified on-site; Institutional Controls (ICs), maintenance, and monitoring to be used.

1998.....ROD remedy completed. The remedy selected created an approximately 5-acre roller compacted cement/soil monolith on the 5.9-acre site. Groundwater contamination present beneath the site was to be remediated by natural attenuation or by removal of the onsite source.

History & Timeline (con't.)

1999.....As part of the statutory five-year process, an evaluation of the original ROD remedy was conducted. Results of that evaluation were presented in November 1999. The report identified concerns related to the long-term effectiveness of the monolith and the reliability of the ICs imposed in the original ROD. Additionally, the State, City, and County of Denver, stakeholders, and the local community requested other alternatives to the onsite remedy be considered. The combination of technical concerns, requests to reconsider the remedy and the State's withdrawal of support resulted in EPA amending the original ROD.

2000.....A ROD Amendment was issued stipulating that the monolith be removed from the site, along with any additionally-identified contaminants in excess of cleanup levels specified in the ROD Amendment. Based on community and other stakeholder input, the ROD Amendment calls for a complete removal and proper disposal of the contaminated material present in the on-site containment cell. Several government agencies sent responses in agreeing with the concerns shared by community members. Some additional administrative measures were also added which promoted transparent communication between EPA and the community.

2000.....In anticipation of EPA's new cleanup plan under the ROD Amendment, the Shattuck Site was selected as a "Superfund Redevelopment Pilot", with the city playing a major part in assessing the best options for reuse.

2002.....Implementation of the remedy stipulated in the ROD Amendment begins.

2003.....Second Five-Year Review conducted on the site. Deficiencies identified include: 1) Groundwater monitoring needs to be finalized and 2) Protectiveness cannot be determined until the remedy is complete and operational.

2006.....Completion of remedy implementation process. At the completion of the Remedial Action for the ROD Amendment, approximately 243,872 tons of contaminated materials were excavated and disposed as a part of the combined work at the Shattuck and Bannock Street (the area adjacent of the site).

2006.....Final Close-Out Report conducted on the Site.

2007.....The Shattuck property was sold and became ready for reuse.

2008.....Third Five-Year Review conducted on the site. The following changes/actions/observations were made: the State of Colorado now monitors groundwater, public still raises concerns about a possible impact of remaining mill tailings deposits under the railroad tracks and Bannock Street, a continuing source of uranium could be impacting the two

History & Timeline (con't.)

wells (MW-1 and PZ-2) closest to the site. The following compounds exceeded health standards – manganese, nitrate, copper, and zinc.

2013.....Next Five-Year Review due.

Distinguishing differences between Shattuck & West Lake Landfill

- Shattuck is located in an urban industrial vicinity where neighboring adjacent properties are zoned commercial and residential. West Lake Landfill is located in an industrial park where the closest residential property is located > ¼ miles away.
- Shattuck is a 5.9-acre area primarily surficial in nature, with some contamination found to extend from the ground surface to depths ranging to over 14.5 feet below the ground surface. West Lake Landfill is a 40-acre area containing a mixture of municipal solid waste and radiological materials distributed throughout the entire site. The materials are present throughout the 40-acre area to depths of 40 feet.
- Shattuck is an open area in an urban setting amidst other like properties. The West Lake Landfill property has a continuous perimeter fence with locking gates. In addition, the two radiologically-contaminated areas are fenced off from the rest of the landfill property and placarded with radiation hazard signs.
- Shattuck was conducted as a “fund-lead” action. West Lake Landfill is being conducted as a “PRP-lead” action.
- Shattuck’s initial ROD cost for stabilization (proposed remedy) was \$26.6 million and the ROD Amendment cost for demolition & full-scale removal (implemented remedy) was \$57,126,558. West Lake Landfill’s initial ROD cost for capping & monitoring (proposed remedy) is \$40 million and based on the Supplemental Feasibility Study (SFS – which is in draft form currently pending comments from Headquarters) the cost for complete offsite removal is estimated to be between \$202 million and \$340 million. The large range in cost differences is based on the individual costs quoted by the two receiving landfills – one in Utah and one in Idaho.